well as the flax, wool, silk, and hides necessary for their clothing."

These two latter works reveal Kropotkin's unbounded faith in man and his hope for a high human destiny through the reconstruction of society and communal production. His knowledge extended over a wide scientific field, and his interest in its advancement never failed. His many friends in this country will long cherish his memory with affection and esteem.

The death occurred, on January 18, of Mr. Rupert Farrant, at the age of thirty-six years. Mr. Farrant was educated at the Westminster Hospital, and he studied also at King's College and St. Bartholomew's Hospitals; after he had qualified as a practitioner in 1906, he held many resident posts in various London hospitals. In 1909 he was made a fellow of the Royal College of Surgeons, and on two occasions he delivered Hunterian lectures at the college. Mr. Farrant made a special study of the ductless glands, especially of the thyroid, in connection with the general metabolism of the body, and he put forward a theory of a correlated cycle of changes in the histological appearance and functional activity of the gland under the influence of toxins. He saw active service at Gallipoli, in Egypt, in Mesopotamia, and in France, where he received injuries by a shell explosion, from the concussion of which he never completely recovered.

It is with deep regret that we learn of the sudden death, on January 31, in his fiftieth year, of Dr. J. C. Cain, editor of the Chemical Society's publications since 1906, and author of leading works on synthetic dyestuffs and intermediate products.

We much regret to announce the death, on January 30, at sixty-five years of age, of Mr. C. E. Fagan, secretary of the British Museum (Natural History), to whose expected retirement after a long period of devoted service reference was made in our Notes columns on January 13, p. 638.

Notes.

The gold medal of the Royal Astronomical Society has been awarded by the council to Prof. H. N. Russell for his contributions to the study of stellar evolution. It will be presented to Prof. Russell at the annual general meeting to be held on Friday, February 11, when the president of the society, Prof. A. Fowler, will deliver an address on the notable work for which the award has been made.

The Lords Commissioners of the Treasury have appointed Sir Robert Robertson, K.B.E., F.R.S., Director of Explosives Branch, Research Department, Woolwich, to be Government Chemist in succession to Sir J. J. Dobbie, who has retired.

A memorial lecture on the life and work of the late Sir William Abney is to be delivered to the Royal Photographic Society of Great Britain by Mr. Chapman Jones. April 26 next has been provisionally fixed for the date.

The council of the Chemical Society has arranged to hold the anniversary dinner at the Hotel Cecil on Thursday, March 17 (the day of the annual general meeting), at 7 for 7.30 p.m., and to invite, as guests of honour, the past-presidents who have attained their jubilee as fellows of the society.

Dr. W. R. G. Atkins, of Trinity College, Dublin, has been appointed head of the department of general physiology at the Plymouth Laboratory of the Marine Biological Association.

Sir Norman Moore, president of the Royal College of Physicians, has appointed Dr. Herbert Spencer to deliver the Harveian oration on St. Luke's Day (October 18), and Dr. Michael Grabham, of Madeira, to deliver the Bradshaw lecture in November. The council has appointed Dr. Major Greenwood to deliver the Milroy lectures in 1922.

A discussion on gravity at sea will be held in the rooms of the Royal Astronomical Society, Burlington House, to-morrow, February 4, at 5 p.m. The chair will be taken by Sir Arthur Schuster. Prof. W. G. Duffield will open the discussion, which will be continued by Sir S. G. Burrard, Dr. H. Jeffreys, Dr. J. W. Evans, and Dr. A. Morley Davies.

A special joint meeting of the Society of Chemical Industry and of the Institution of Mechanical Engineers will be held at the rooms of the institution, Storey's Gate, Westminster, S.W.1, on Friday, March 4, at 6 p.m., when M. Paul Kestner, president of the Société de Chimie Industrielle, will read a paper on "The De-gassing and Purification of Boiler Feedwater."

At the meeting of the London Mathematical Society to be held in the rooms of the Royal Astronomical Society at Burlington House, W.1, on Thursday, February 10, at 5 p.m., Prof. A. S. Eddington will deliver a lecture on "World Geometry." The lecture will be concerned with the mathematical side of the general theory of relativity, with especial reference to electricity and gravitation and the work of Prof. H. Weyl. Visitors from other societies will be welcome.

In the issue of Nature for January 27 there appeared an illustration (p. 699, Fig. 2) of a sculptured group from the decoration of the building of the Institute of Human Palæontology in Paris. The official description which was supplied with the photograph stated, no doubt by inadvertence, that the anthropoid forming part of the group was an orang-utan. A close inspection, however, shows that it is undoubtedly a gorilla.

Science of January 14 announces that the Rockefeller Foundation has given to France complete control over the elaborate anti-tuberculosis organisation established in the Department of Eure-et-Loir at a cost of 4,000,000 francs. The organisation consists of twenty-four dispensaries, four complete isolation services, and a departmental sanatorium and laboratory. The system will serve as a model for similar organisations to be established by the Government throughout the country. The Rockefeller Foundation is now assisting in the anti-tuberculosis campaign in thirty-eight of the eighty-seven Departments of France, and work is contemplated which will last for another two years.

AT the annual general meeting of the Royal Meteorological Society on January 19 the following were elected officers and members of council:—*President:* Mr. R. H. Hooker. *Vice-Presidents:* Mr. J. Baxendell, Mr. W. W. Bryant, Sir Napier Shaw, and Dr. E. M. Wedderburn. *Treasurer:* Mr. W. V. Graham. *Secretaries:* Mr. J. S. Dines, Mr. L. F. Richardson, and Mr. G. Thomson. *Foreign Secretary:* Mr. R. G. K. Lempfert. *Councillors:* Mr. C. E. P. Brooks, Capt. C. J. P. Cave, Mr. J. E. Clark, Mr. R. Corless, Dr. H. N. Dickson, Mr. G. M. B. Dobson, Mr. F. Druce, Mr. J. Fairgrieve, Mr. H. Mellish, Mr. M. de C. S. Salter, Dr. G. C. Simpson, and Mr. F. J. W. Whipple.

THE MINISTER OF HEALTH, with the concurrence of the University Grants Committee, has appointed a Committee "to investigate the needs of medical practitioners and other graduates for further education in medicine in London, and to submit proposals for a practicable scheme for meeting them." The members of the Committee are as follows:—The Earl of Athlone (chairman), Mr. H. J. Cardale, Sir Wilmot Herringham, Sir George Makins, Sir George Newman, Sir Robert Newman, Sir Edward Penton, Sir E. Cooper Perry, Mr. J. Dill Russell, and Dr. T. W. Shore. Mr. A. L. Hetherington will act as secretary of the Committee, and all communications should be addressed to him at the Ministry of Health, Whitehall, London, S.W.1.

AT a meeting of the award committee, consisting of the presidents of the principal representative British engineering institutions, held in London on Tuesday, January 25, the first triennial award of the Kelvin gold medal was made to Dr. W. C. Unwin, who was, in the opinion of the committee, after consideration of representations received from leading engineering bodies in all parts of the world, the most worthy to receive this recognition of pre-eminence in the branches of engineering with which Lord Kelvin's scientific work and researches were closely identified. The arrangements for the presentation of the medal will be announced shortly. The Kelvin gold medal was established in 1914 as part of a memorial to the late Lord Kelvin and in association with the window placed in Westminster Abbey in his memory by British and American engineers.

THE members of Mr. L. H. Dudley Buxton's expedition have now returned from a stay of some weeks in the Island of Malta. The object of the expedition was to collect material for a study of the physical anthropology of this island. About 1000 adults, men and women, were measured. The fine series of ancient bones which Prof. Zammit excavated in the Hypogæum at Hal-Saflieni and elsewhere was collected together and measured. A long series of skeletal remains from a modern ossuary was also examined. A special visit, lasting for two days, was paid to Gozo by Mrs. Jenkinson and Miss Moss to work at the physical anthropology of that island. The expedition has collected an immense mass of valuable material, which will take some time to arrange and digest. As soon as this work is sufficiently far advanced Mr. Buxton hopes to submit a preliminary account of the results of the expedition to the Royal Anthropological Institute.

AT an extraordinary general meeting of the Chemical Society held in May, 1919, for the purpose of dealing with various modifications of the by-laws, amongst which was the provision for the admission of women as fellows on the same terms as men, the council was authorised to apply to the Crown for a supplemental charter giving the power to make the necessary alterations in the by-laws. The petition for the supplemental charter received the assent of his Majesty the King, and all the additional powers sought by the society were thus secured. The new by-laws recommended by the council received the approval of the general body of fellows at an extraordinary general meeting held on April 29, 1920, and came into operation on June 1. At the ballot for the election of fellows held on December 2 last, of the ninety-seven who were elected fellows twenty-one were women, and amongst the candidates for whom a ballot will be held on February 17 appear the names of six women.

REFERENCE was made last week to correspondence in the *Times* on the effects of the discharge of oil from ships into the sea. Oil enters the sea in various ways, *e.g.* the "steaming-out" of the "tankers" and accidental leakages. The "benzene" oils must evaporate quickly, but the heavy fuel-oils may be more persistent. So far the evil is local, and there is no evidence of any widespread effect upon the larger fisheries. Sir Arthur Shipley suggests, on the authority of Prof. A. Meek, that 1916–17–18 were bad years for plaice fry, and that some factor was in operation during that period which was detrimental to fish-life. This factor may have been the discharge of oil from sunken ships. On the other hand, there is strong statistical evidence that plaice were more abundant in the North Sea during the years 1919–20 than during the years immediately before the war. This is also the case in the Irish Sea, 1910 being a maximum, 1918 a minimum, while 1920 and 1921 tend towards another maximum. Prof. H. E. Armstrong refers to the failure of the Loch Fyne herring fishery, and suggests that this was due to "floating defilement from the Clyde," but the herrings are now returning to Loch Fyne. The question is a very complex one, and investigation is obviously called for. In connection with the subject discussed, Lord Rayleigh refers in the *Times* of January 27 to experiments made by his father in 1889, which showed that a continuous film of oil on the surface of water need not be so much as a ten-millionth part of an inch in thickness. "On the basis of his figures it may be calculated that the ocean could be covered by 500,000 tons of oil—not beyond the carrying power of a fleet of very large ships."

SIR ROBERT HADFIELD contributed recently an article to the *Iron and Coal Trades Review* on "The World Hunger for Steel." It appears that in 1913 the exports of steel from the three chief steel-producing countries were as follows:—Germany, 5,500,000 tons; Great Britain, 5,000,000 tons; and the United States of America, 2,750,000 tons. Against this the estimates of the exports in 1920 were as follows:—Germany, 200,000 tons; Great Britain, 3,300,000 tons; and the United States, 4,300,000 tons. The statistics of production reinforce the lesson given by the export figures. In 1913 the world's production in pig-iron amounted to about 76,000,000 tons; last year it is estimated to have been not more than 56,000,000 tons. Taking these figures as well-founded, it will be recognised readily that the world is very short of supplies of iron and steel. Sir Robert Hadfield points out that this shortage is a very serious matter, and that the development of modern civilisation must be greatly hindered unless increasing supplies can be obtained. He estimates the shortage of steel at from 25,000,000 tons to 30,000,000 tons. He then goes on to consider the question of costs of production, and points out how vital is the price of fuel. Two months ago it is estimated that the cost of coal at the pit's mouth in this country was 34*s*. a ton, whilst in America it was about half that figure. In both countries it takes about 1¾ tons of coal to produce 1 ton of iron. There are, however, countries where coal is produced more cheaply than in America, and Sir Robert states that in South Africa, India, and China it is being raised and sold at very little more than 5*s*. a ton. In spite of these considerable differences of price, he holds the view that there is no reason why there should not be a greatly increased production in this country owing to the demand caused by the shortage of steel, which has been emphasised. Whether this will prove to be the case depends principally upon the extent of co-operation between employers and employed.

FROM the *Brooklyn Museum Quarterly* for April, 1920, we learn that the expedition sent by that museum to make collections in the coastal waters of Peru has been most successful. Mr. R. C. Murphy, who was in charge of the expedition, reports large collections of marine animals and plants and geological specimens. A series of kinematograph pictures of wild life on the coast and of the Peruvian guano industry was also obtained. Special attention was paid to the investigation of the conditions of marine life dependent on the Humboldt current.

IN the *Museums Journal* for January Mr. E. N. Fallaize formulates a scheme for the classification of the subject-matter of anthropology, in which human structure and activities rank before divisions of time and space. The reasons for the arrangement are discussed, and the actual scheme will follow in the February issue. The Headmaster of Winchester gives sound advice on lantern-slides of Renaissance art; Prof. Aldred Barker, of Leeds, reviews a guide to carpet-knotting and weaving; and Mr. R. L. Hobson, of the British Museum, writes on Pountney's "Old Bristol Potteries." A technical criticism of the Wallace Collection from the museum curator's point of view, and other reviews and notes, make up an interesting number. Dr. Bather, who has taken charge of the journal for ten months, now hands over the editorship to Mr. J. Bailey, who is retiring from the Victoria and Albert Museum.

WE have recently received the July number (vol. ii., No. 3) of the *Queensland Naturalist*, which, owing to the difficulties of the past few years, has been in abeyance since April, 1917. It is the organ of the Queensland Field Naturalists' Club, and is described in the foreword of the present number as the only journal of its kind published in a State which is, from a natural history viewpoint, probably the richest field in the whole of Australia. The editor refers to the success of the club in initiating or aiding efforts for the better protection of the fauna and flora of the Macpherson and Bunya ranges, and of particular birds and animals. Among the short articles included in this number is a description of a new fossil plant from Petrie's Quarry, near Brisbane, and a critical account, by Mr. C. T. White, of two native phalloid fungi, one of which is endemic in South-Eastern Queensland.

THE myriopods, or more correctly the Diplopoda, of the sub-family Pyrgodesminæ, are small creatures from ¼ in. to ⅜ in. long, with the back curiously covered with processes or tubercles, and bearing also bristles or papillæ. These latter gather the dirt, and often so encrust the body as to mask its form and merge its colour in that of the ground, so, though they cannot really be rare, from the Orient we have hitherto known representatives of only two genera, the Pyrgodesmus and Lophodesmus of Pocock (1892). Now in the Records of the Indian Museum (vol. xix., part 4) Dr. F. Silvestri describes five new genera based on species from Cochin, Ceylon, and New Guinea. His Latin descriptions are illustrated by excellent drawings, which, in the absence of an artist's name, we must assign to the author's own pen. Some of these show the body *humo indutum*, others *humo denudatum*.

IN spite of war difficulties, Dr. Annandale, in his Report on the Zoological Survey of India for the years 1917–20, has been able to record an amount of work important in itself and remarkable as conducted by a scientific staff of four persons only. The purely zoological inquiries happened to deal with various aspects of river- and lake-life. Thus the return to India of troops infected with Schistosoma and the fears that the infection might spread led to an extensive search for possible molluscan hosts; the results, fortunately negative, saved the expenditure of large sums of money on needless precautions. Some interesting points of wider application crop up in some of these investigations. The resemblance of the fauna in a muddy creek of the Ganges to that of the deep sea is assigned by Dr. Kemp to the common factors of a muddy bottom and low visibility. The discovery that the peculiar sculpture of the shell in certain Viviparidæ is connected with the persistence of structures present on the edge of the mantle in the embryos of smooth-shelled forms bears on the origin of the varied ornament in those molluscs. These and many other interesting results have suggested to Dr. Annandale the need for a survey of the macroscopic fauna of the lakes of Asia.

At the request of Alderman F. C. Clayton, some members of the botanical department of Birmingham University visited the Birmingham Water Department's reservoirs at Shustoke, near Whitacre, on October 14 last. The water in the smaller of the two reservoirs (about 8 acres in extent) had been drained off at the end of July for cleaning purposes, leaving the bottom covered to a depth of 1½ ft. to 2½ ft. with a mixture of vegetation and mud. The small reservoir had not previously been cleaned, except at the sides, since its completion in 1883. The vegetation appeared to have consisted mainly of green algæ, together with a number of aquatic flowering plants and a marginal zone of *Fontinalis antipyretica*. The algæ were represented by a number of genera, *Cladophora fracta* being the dominant species. An allied species, probably a form of *C. crispata,* occurs regularly in the slow sand filter-beds at the neighbouring waterworks. During the cooler months this alga often covers the bottoms of the filter-beds with a matted felt of algal filaments, locally known as "blanket weed." So long as the alga remains on the bottom it appears to assist materially in the process of filtration. On the advent of hot weather the alga tends to rise, and has to be removed. Another feature of interest is the very rapid colonisation by plants of the drying, muddy bottom of the reservoir. Although only some two and a half months had elapsed since the lowering of the water-level, the surface of the mud was already occupied by an open association of plants which included algæ, together with patches of stunted land forms of aquatic flowering plants. In addition to the true aquatics, semi-aquatics, and even land plants, were spreading rapidly in a centrifugal direction over the surface.

On Friday, January 28, a general meeting of the Association of Economic Biologists, presided over by Sir David Prain, was held in the Imperial College of Science. Mr. E. E. Green showed a large Gasteropod which has been introduced into Ceylon, and is now present in destructive numbers. Dr. Llewellyn Lloyd gave an account of his investigations on the greenhouse white-fly and measures for its control, and described interesting new details in the structure and life-history of the insect. The only successful treatment is hydrocyanic fumigation, this being carried out at intervals of fourteen days in summer and of twenty-five days during the winter months. Light is a very important factor; the temperature should be between 40°–60°, and the dosage ¼ oz. of sodium cyanide to every 1000 cubic ft. space. Atmospheric humidity is relatively unimportant, but if cyanide-burning of the foliage is to be eliminated the plants should have dry roots. An animated discussion took place, in which Mr. Green, Prof. V. H. Blackman, Dr. Imms, Dr. Hargreaves, Mr. Dykes, and Mr. Emptage participated. Mr. Brierley then gave a paper on "Personal Impressions of some American Biologists and their Problems." Mr. Brierley was one of the three foreign representatives invited to the American Phytopathological Congress in 1920, and afterwards visited the principal scientific institutions and many regions of botanical or agricultural interest.

The system of colour notation introduced by Munsell in 1905 has been found of such practical value by the manufacturers of colours and of coloured goods in America that the U.S. Bureau of Standards has undertaken an examination of the system with a view to its improvement. An account of the work done by Messrs. Priest, Gibson, and McNicolas forms Technologic Paper No. 167 of the Bureau. Colours are specified by their hue, their purity or chroma, and their brightness, luminosity, or "value," and the Munsell atlas contains coloured cards of six different hues—grey, red, yellow, green, blue, and purple—each in different degrees of purity and luminosity. These cards have been examined by means of the spectrophotometer, and curves which show the amount of light reflected of each wave-length are given. From these it appears that the Munsell "values" are proportional to the square roots of the amounts of sunlight reflected, and the authors suggest that in future editions of the atlas the numbers indicating the luminosities should be proportional to the logarithms of the reflections. In order to secure this and other suggested improvements, the Optical Society of America and the Bureau are now consulting those interested in colours.

One of the largest steel-frame buildings which have been constructed by welding methods in Great Britain is illustrated in *Engineering* for January 14. This building constitutes the new workshops of Messrs. the Double Arc Electric Welders, Ltd., and is situated in Glasgow. The steelwork throughout was welded by the company on its system. The name of this firm is derived from the special flux with which it coats its welding electrodes. The flux is conducting, and it is claimed that an independent arc is formed between the flux and the work, as well as the arc between the electrode and the work; this gives the double arc. The building is 27 ft. wide and 50 ft. long; there are five roof principals carried on columns having welded-on bases. The roof principals are built of angles and channels, both of which members are welded to the webs of the columns. The secondary members of the trusses, together with purlins, etc., are all welded at the points of attachment. Even the steel door-frames are welded. Electric welding would appear to offer many points of advantage in the field of construction, and is obtaining a sound footing.

The latest catalogue (No. 409) of Mr. F. Edwards, 83 High Street, Marylebone, W.1, consists of particulars of nearly a thousand books, maps, engravings, and drawings relating to North America (United States and Canada). Many items will be of interest to readers of NATURE, *e.g.* a number of works on the Indian tribes of North America, Audubon's "The Birds of America," the very rare book by T. Morton entitled "New England Canaan, or New Canaan," and the silver ticket of Benjamin Franklin's membership of the Royal Society of Edinburgh. The catalogue will be sent free of charge by the publisher.

IN the Fauna of British India Series the further volumes which the editor, Sir Arthur E. Shipley, with the assistance of Dr. Guy A. K. Marshall and the sanction of the Secretary of State for India, has arranged for are: Butterflies (Lycænidæ and Hesperiidæ), Mr. N. D. Riley; The Ixodidæ and Argasidæ, Prof. G. H. F. Nuttall and Mr. C. Warburton; Leeches, Mr. W. A. Harding; The Diptera Brachycera, Mr. E. Brunetti; The Operculata, Mr. G. K. Gude; The Curculionidæ, Dr. G. A. K. Marshall; The Carabidæ, Mr. H. E. Andrewes; The Meloidæ, Mr. K. G. Blair; The Erotylidæ and Endomychidæ, Mr. G. J. Arrow; The Culicidæ, Capt. P. J. Barraud, Major S. R. Christophers, and Mr. F. W. Edwards; The Chrysomelidæ, Mr. S. Maulik; The Oligochætæ, Lt.-Col. J. Stephenson; The Scolytidæ and Platypodidæ, Lt.-Col. Winn Sampson, together with a revised edition of Mammalia by Mr. Martin A. C. Hinton and Mr. R. C. Wroughton, and of Birds (4 vols.) by Mr. E. C. Stuart Baker.

THE list of new books and new editions added to Lewis's Medical and Scientific Circulating Library during October to December, 1920, has reached us from Messrs. H. K. Lewis and Co., Ltd., 136 Gower Street, W.C.1. Although intended primarily for subscribers to the library, it should be of great service to all who wish to keep in touch with medical and scientific literature, being practically a complete catalogue of important books in English on medicine and science issued during the period named. It is carefully classified according to subjects, and will be sent gratis upon application.

MESSRS. L. OERTLING, LTD., Turnmill Street, London, E.C.1, ask us to announce that they are recommencing their service of attendance to balances in customers' own laboratories throughout the United Kingdom. This service was discontinued during the war owing to the extreme pressure of work in the firm's manufacturing departments and to the lack of mechanics possessing the necessary technical ability.

Our Astronomical Column.

PLANETS NOW VISIBLE.—In the second week of February all the bright planets will be visible to the naked eye. Venus, Mars, and Mercury will be in the western sky, while Jupiter and Saturn will appear in the eastern.

Mercury will be at greatest elongation on February 15, when it sets about $1\frac{3}{4}$ hours after the sun. Venus will set on February 13 at 9.40 p.m., and Mars at 8.32 p.m. On February 9 the crescent of the new moon will be in conjunction with Mercury, and with Mars on February 11. Venus will be a very conspicuous object, but Mars will appear unduly faint, owing to its great distance from the earth.

Jupiter rises on February 14 at 7.33 p.m. and on February 28 at 5.52 p.m., while Saturn rises about 40 minutes later. These objects are situated in the southern part of Leo, and will be in the same region as the moon on February 23.

THE DIAMETERS OF STARS.—*Popular Astronomy* for January states that the observations of the diameter of Betelgeux were made on December 13 by Mr. F. G. Pease and Dr. J. A. Anderson, the method being due to Prof. A. A. Michelson. The measured diameter is given as 0·047″.

Prof. H. N. Russell, before the result was known, published the following estimates of the angular diameters of the brighter red stars:—Betelgeux, 0·031″; Antares, 0·028″; Aldebaran, 0·024″; Arcturus, 0·019″; β Crucis, 0·026″; and β Gruis, 0·020″. All these are within the range of possible measurement. The angular diameters of the stars of types A, B, and F are very much smaller (Sirius being 0·007″), and there is little prospect of success with them.

It is of interest to note that the parallax of Arcturus has recently been redetermined at Yerkes Observatory by Messrs. O. J. Lee and G. van Biesbroeck (*Pop. Astr.*, January). The result, 0·095″ ± 0·006″, is larger than previous values. Russell's angular diameter would imply a linear diameter of one-fifth astronomical unit, or twenty-two times that of the sun. The thwart velocity would be 24 astronomical units per annum, or 70 miles/sec.

MINOR PLANETS.—The remarkable body HZ was observed at Algiers, January 12·3, in R.A. 0h. 17·5m., N. decl. 26° 52′, mag. 13·8. The planet has now been under observation for $2\frac{1}{2}$ months, and the orbit already published in this column, with perihelion near Mars and aphelion near Saturn, is fully confirmed. Such an orbit is obviously of a cometary character, yet careful scrutiny has failed to show any sign of nebulosity.

Nine hundred and thirty-three minor planets have now received permanent numbers. The difficulty of keeping such a large number under regular observation is considerable, so it is satisfactory to note that tables giving the approximate perturbations by Jupiter of about 100 planets have lately been published in *Astr. Nachr.*, which should be of great assistance in preparing accurate ephemerides. One planet in particular, 170 Maria, has been studied in great detail by K. Boda (*Astr. Nachr.*, 5080). This belongs to the Hestia type (period about $\frac{1}{3}$ of Jupiter's), and has small eccentricity, but considerable inclination. The tables are compared with observations from 1877 to 1916. The largest residuals (Obs.—Tab.) are + 58″ in 1889 and −50″ in 1904. Greater accuracy could not be attained without very elaborate tables.

The chief centres of minor planet observation during the past year have been Algiers (MM. Gonnessiat and Jekhowsky), Barcelona (Prof. Comas Sola), Heidelberg (Dr. Max Wolf), and Hamburg. Marseilles observatory has assisted by circulating observations and ephemerides.